

linear amplitude distortion of the ultrasonic signal along the propagation path and thereby produces a distorted ultrasonic signal comprised of a first order component signal and higher order harmonic component signals at a first and higher order harmonic frequencies respectively, and further wherein the sample also reflects the distorted ultrasonic signal including the first order and the higher order harmonic components ultrasonic;

b | receiving the higher order harmonic components of the reflected distorted ultrasonic signal [reflected] produced by the distortion of the initial ultrasonic signal along the propagation path and caused by said sample[, which received signal is distorted and contains a first order and higher order component signals at first and higher frequencies respectively];

forming an image principally from one of said received higher order harmonic components [signals] of the [received] reflected distorted ultrasonic signal [, including the step of removing from the received distorted signal the first order component thereof]; and

displaying said formed image.

13. (Twice Amended) A system for imaging a biological sample, comprising:

B2 means for generating an initial ultrasonic signal;

means for directing the initial ultrasonic signal into and along a propagation path in the [a] sample, wherein the sample causes finite, non-linear amplitude distortion of the fundamental signal along the propagation path, and said distortion produces a

distorted ultrasonic signal comprised of a first order component and higher order harmonic components at a first and higher order harmonic frequencies respectively, and wherein the sample also reflects the distorted ultrasonic signal including the first order and the higher order harmonic components thereof;

means for receiving the [signal reflected] higher order harmonic components of the reflected distorted ultrasonic signal produced by the distortion of the initial ultrasonic signal along the propagation path and caused by said sample [, which received signal is distorted and contains a first order and higher order component signals at first and higher frequencies respectively];

b2 means for forming an image principally from one of said received higher order harmonic component signals of the [received] reflected distorted ultrasonic signal [, said means for forming the image including means for removing from the received distorted signal the first order component thereof]; and

means for displaying said formed image.

Cancel Claims 8, 10, 23 and 27, and substitute therefor new Claims 29-32, respectively, set forth below.

--29. A method according to Claim 2 wherein:

b3 the higher order harmonic component signals include a second order harmonic component and further, higher order components; and

the forming step includes the step of forming the image principally from the second order component of the received

reflected distorted ultrasonic signal.

30. A method according to Claim 2, further including the step of maintaining the sample substantially free of any contrast agent while directing the initial ultrasonic signal into and along the propagation path in the sample.

31. A method according to Claim 2, wherein:

the generating step includes the step of generating a series of ultrasonic pulse signals; and

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the directing step includes the step of directing the series of ultrasonic pulse signals into and along the propagation path in the sample.

32. A method according to Claim 2, wherein the sample linearly reflects the distorted ultrasonic signal produced by the distortion of the initial ultrasonic signal along the propagation path and caused by the sample..-

Cancel Claims 19, 21, 25 and 28, and substitute therefor new Claims 33-36, respectively, set forth below.

--33. A system according to Claim 13, wherein:

the higher order harmonic components include a second order harmonic component and further, higher order harmonic components; and

the forming means includes means for forming the image principally from the second order harmonic component of the received reflected distorted ultrasonic signal.

34. A system according to Claim 13, for use with a sample